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(71) Applicant(s)
**Thornton Investments Ltd**

(72) Inventor(s)
**Harry George Cockburn**

(74) Agent/Attorney
**BALDWIN SHELSTON WATERS,Level 21,60 Margaret Street,SYDNEY NSW 2000**

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(71) Applicant(s)
**THORNTON INVESTMENTS LTD**

(72) Inventor(s)
**HARRY GEORGE COCKBURN**

(74) Attorney or Agent
**BALDWIN SHELSTON WATERS , Level 21, 60 Margaret Street, SYDNEY NSW 2000**

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~~(71) Applicant (for all designated States except US): SNAP PAK PACKAGING SYSTEMS LIMITED [NZ/NZ]; 44 Gasson Street, Sydenham, Christchurch (NZ).~~

(72) Inventor; and
(75) Inventor/Applicant (for US only): COCKBURN, Harry, George [NZ/NZ]; 44 Gasson Street, Sydenham, Christchurch (NZ).

(74) Agents: LYTH, Richard, John et al.; Baldwin Son & Carey, 342 Lambton Quay, Wellington 6001 (NZ).

(71) Applicant: Thornton Investments Ltd; The Trustee of Thornton Number One Trust, 44 Gasson Street, Sydenham, Christchurch, Nouvelle-Zelande

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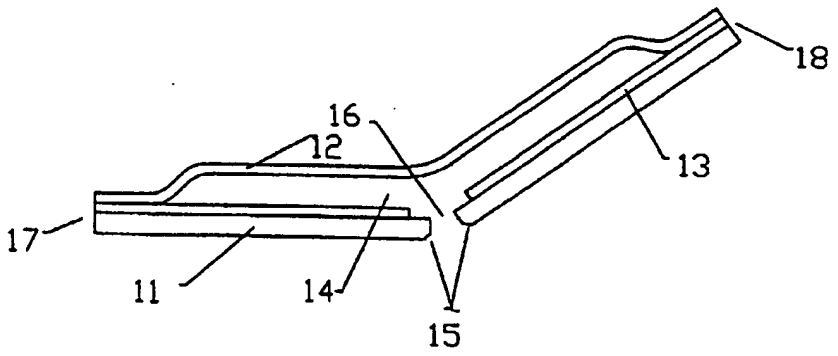



(57) Abstract

A breakable sachet and method of manufacturing same is described. The sachet is formed from layers (11, 12, 13) of plastics film sealed so as to form a reservoir (19). The sachet further incorporates a semi-rigid layer (11) which is scored or weakened (15) so that when the semi-rigid layer is bent, it fractures along the score (15) and the contents of the reservoir can be expelled via a hole (16), formed proximate the fracture point, in controlled manner. A method of manufacturing the sachets includes forming a vertical reservoir which includes a semi-rigid layer (33), the reservoir is partitioned by means of a hot roller (34, 35) and the webs (31, 32, 33) forming the reservoir and sealed to the semi-rigid layer (33) include a hole (16) formed therein. The semi-rigid layer (33) includes a score or weak point (15).

# Breakable Sachet

## Technical Field

The present invention relates to sachets. More particularly, although not exclusively, the present invention relates a sachet for storing and dispensing quantities of liquid, paste, powder or similar substances in discrete predetermined quantities. The present invention further relates to an apparatus and method for producing said sachets.

The general area of application of the present invention is in the production and distribution of food condiments. However, other applications such as dispensing medicines, glues, cosmetics and the like are envisaged.

## Background To The Invention

Sachets known in the art include flexible sachets wherein the contents are expelled by, for example, tearing off a corner or end of the sachet and exerting pressure on the exterior of the sachet.

Other prior art devices include rigid moulded "tray" or "blister" type sachets wherein the condiment or similar substance is sealed in by means of an aluminium foil or plastic lid. The lid is heat-sealed or otherwise secured to the upper edges of the tray. In this case the contents are extracted by peeling back the foil lid and either exerting pressure on the lid and the plastic tray or by using an implement such as a knife or spoon to extract the contents.

These constructions suffer disadvantages in that they can be expensive to manufacture, messy to use and, when extracting the contents of the sachet,

behave unpredictably in terms of the flow of the substance through, for example, the aperture formed by tearing of the corner of the sachet. In the case of the tear-back foil lid the mobility and ease of extraction of the contents may bay depending on the viscosity of the contents.

There have been attempts to overcome these advantages in the prior art, however they have met with mixed success. One solution includes dividing the rigid tray into two sections and providing a perforated "beak" in a more substantial plastic or foil lid. The beak is located between the two tray sections wherein the tray sections in the beak are arranged so that when the ends of the condiment tray are bent towards each other in such a manner as to crush one section against another, the beak cracks along the aforesaid perforation and the contents may be expelled through the cracked beak by squeezing. This construction suffers from disadvantages in that the perforations sometimes crack in transit, and the contents of the tray sections can spoil or be otherwise contaminated. They are also more complicated structurally and therefore more expensive to manufacture.

It is an object of the present invention to provide a sachet and a means and method for producing the same, which overcomes or at least mitigates the above mentioned disadvantages, or at least provides the public with a useful choice.

Disclosure Of The Invention

According to one aspect of the invention there is provided a sachet for the storage and application of liquid/paste substances formed from a plurality of plastics layers sandwiched together to form a reservoir wherein at least one of said layers is a semi-rigid plastics layer adapted so that upon bending said semi-rigid plastics layer a score or a region of weakness therein will fracture, said semi-rigid plastics layer is located so as to

form an outside layer of said plastics layers wherein the plastics layer adjacent the semi-rigid layer incorporates an aperture located proximate said fracture.

A method of manufacturing sachets including sandwiching two plastics layers and one semi-rigid layer together in such a way as to form a continuous elongate reservoir wherein the plastics layer adjacent the semi-rigid layer has an aperture formed therein prior to forming said continuous reservoir; the reservoir is filled with a liquid, paste or similar substance and the filled reservoir fed continuously through a hot roller, the hot roller being adapted to seal the continuous reservoir substantially perpendicular to the elongate direction of said continuous reservoir and in such a manner as to form discrete reservoirs corresponding to each sachet reservoir wherein a fracture line or score is formed in the semi-rigid layer either during manufacture or preformed in the semi-rigid layer and wherein the fracture line or score is proximate the aperture.

The sachet can be formed from two plastics layers and one semi-rigid layer wherein the plastics layer adjacent the semi-rigid layer incorporates an aperture located proximate said fracture.

Alternatively, the sachet can be formed from one plastics layer and one semi-rigid layer wherein the reservoir is formed therebetween.

The sachet can be elongate, oval or similar suitable shape.

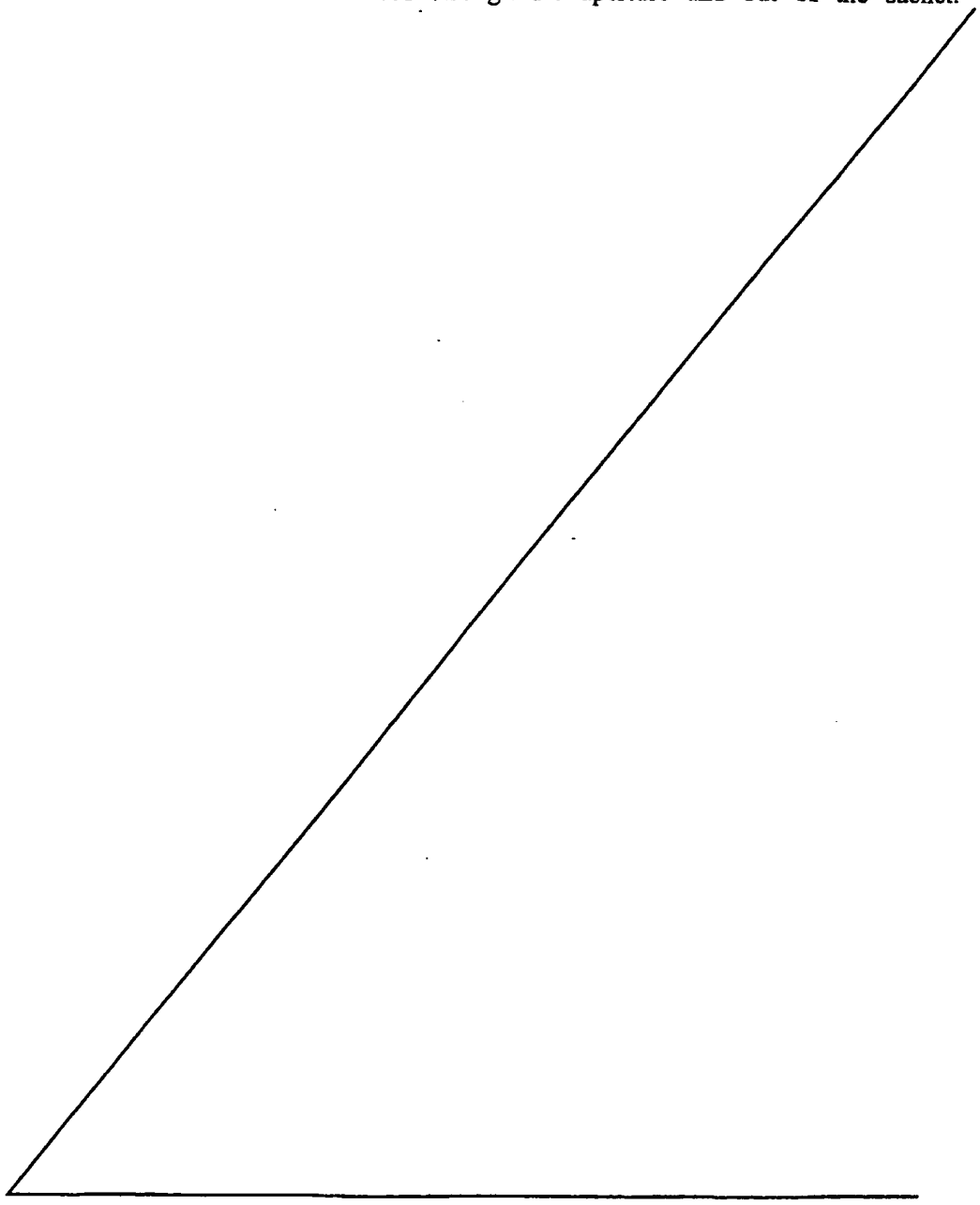
The reservoir can contain a liquid, paste, powder or similar substance.

The reservoir can, with suitable adaptation contain a powder, granules or similar dry substance.

In an alternative embodiment, the semi-rigid plastics layer may be smaller than the reservoir formed from the first and second flexible plastics layers, the geometry of the plastics layers being adapted so that the reservoir forms a flexible bag and the semi-rigid

layer forms an opening means.

In use, the sachet is adapted so that when it is bent the semi-rigid layer fractures and upon further bending and subsequent compression of the reservoir contents, the liquid, paste or similar substance is forced through the aperture and out of the sachet.



According to another embodiment of the invention there is provided a sachet formed from a plurality of layers sandwiched together to form a reservoir wherein a centre layer is semipermeable so that removal of a sealing layer allows a fluid in the reservoir to permeate to atmosphere.

The layers can be two plastics layers and the sealing layer sandwiched together with the reservoir formed between the plastics layers, the centre layer being semipermeable.

The sealing layer can be formed from a plastic or other material which is removable.

The liquid in the reservoir can be scented, an air freshener or slow release insect repellent or killer.

Preferably a dumb-bell shaped hot roller is used to form the continuous elongate reservoir.

Preferably the hot roller which seals the reservoir into discrete reservoirs is cog shaped in cross-section, the cog teeth forming the sealing surface.

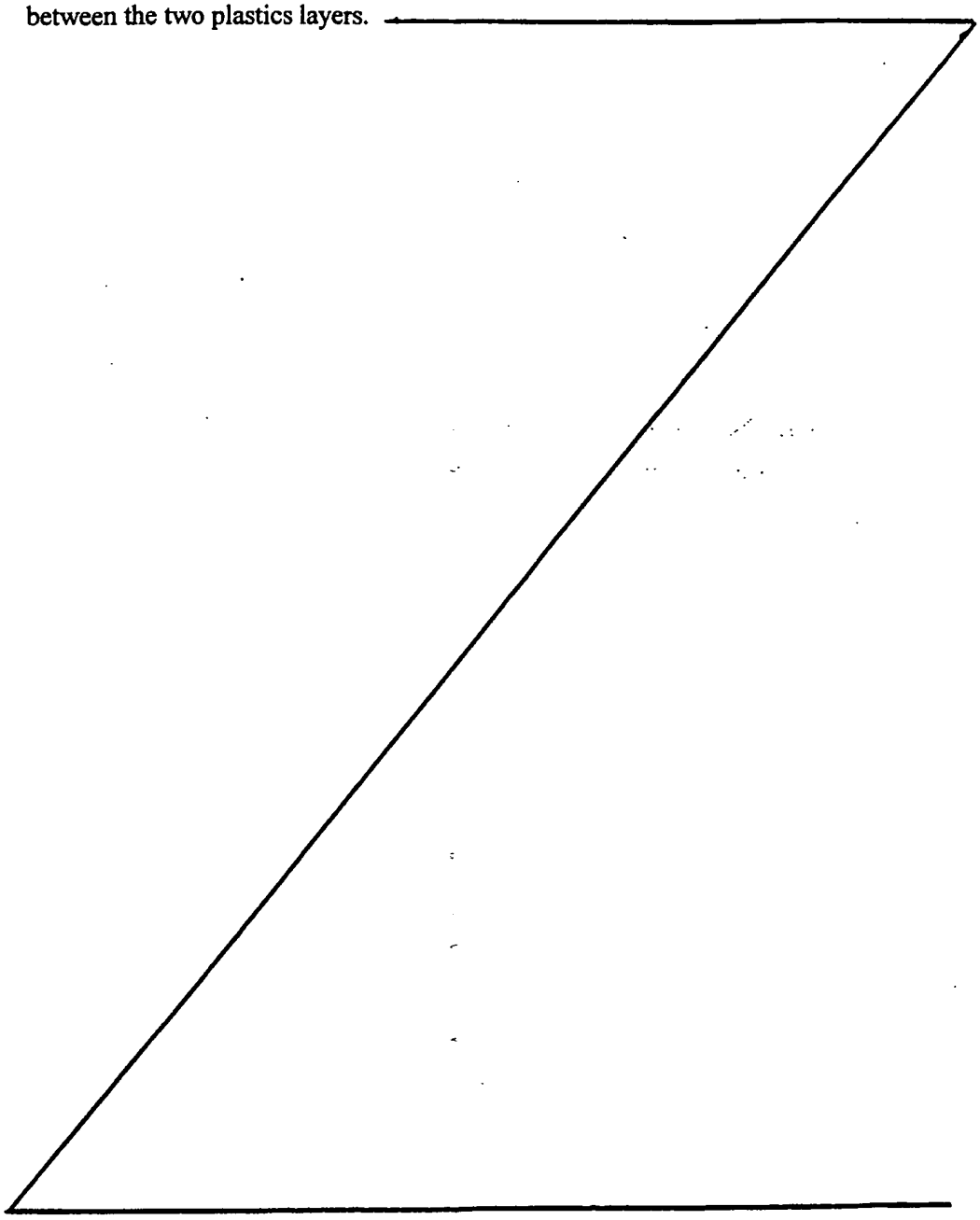
Preferably, the sealing step can be repeated.

Preferably the semi-rigid layer and the adjacent layer are pre-laminated prior to the addition of any further layers.

A fracture line or score can be formed in the semi-rigid layer during manufacture or be preformed in the semi-rigid layer.

Preferably, the fracture line or score has dimensions such that the semi-rigid layer fractures in a region proximate the hole in the plastics layer.

Preferably the continuous reservoir is oriented substantially vertically and filled using delivery means having an outlet located in the continuous reservoir formed between the two plastics layers.



The plurality of plastics layers can be sealed by heat, heat activated glue or similar means.

Further objects and advantages will become apparent in the following description which will be by way of example only and with reference to the accompanying drawings.

Brief Description Of The Drawings

Figure 1 illustrates a perspective view of a sachet;

Figure 2 shows a section through the sachet along line A-A;

Figure 3 illustrates the sachet through the section A-A when the contents are being extracted;

Figure 4 illustrates an exploded view of section A-A; and

Figure 5 illustrates a schematic of an apparatus for manufacturing the sachets.

In the example shown in Figures 1 to 4 the sachet is made up of three plastics layers 11, 12 and 13. Layer 11 corresponds to the semi-rigid plastics layer and layers 12 and 13 correspond to the flexible plastics layers which between them form the reservoir which contains the liquid, paste, or similar substance indicated in outline by 19.

For clarity, the thickness of the layers have been exaggerated in Figures 1 to 4. In practice the layers 12 and 13 will be plastics films and the semi-rigid layer 11 will be approximately 0.5mm thick.

It is to be understood that variations in these thicknesses are within the scope of one skilled in the art and the present example is not to be construed restrictively.

Referring to Figure 2, the semi-rigid plastics layer 11 incorporates a transverse "score" 15. This is to provide a predictable fracture line so that when the ends 17 and 18 of the sachet are drawn together the reservoir 14 may be compressed between the two halves. The transverse score 15 acts as a weak point and the semi-rigid plastic layer 11 will fracture cleanly along that line, thereby providing a fracture region. The orientation of the fracture line is not restricted to transverse and other configurations are envisaged such as diagonal or offset from the centre. The fracture need not form a straight edge. Depending on the particular application, a curved, diagonal or serrated edge may be suitable. Also, while the transverse score is shown extending completely across the sachet, it may stop short of the edges and therefore provide a weak point primarily in the region near the hole. This avoids the possibility of sharp edge being produced at the edge of the broken semi-rigid layer pieces.

Referring again to the embodiment including the centre layer, when the ends 17 and 18 are drawn together (upwards in Figures 2 and 3), the reservoir 14 is compressed and the liquid or paste 19 contained therein is forced out of the hole 16 and onto the article desired (food etc.).

The hole 16 is located in layer 13 proximate the transverse score 15. In this particular example, the aperture is an oval hole 16. Alternatively, the hole could

be in the form of a slit or other shape, and aligned with the transverse score. Such variations are considered within the scope of the present invention.

The configuration of the particular example described herein is particularly advantageous in that upon drawing the ends 17 and 18 together the score is fractured and the substance contained within the reservoir 14 may be then extruded or forced through the hole 16 in a controlled manner. Further the edge formed by the transverse score 15 may be used to spread the substance or distribute it onto the article as desired. It is considered that this provides more control over where or how the substance in reservoir 14 may be spread or deposited than the prior art devices and further does not require the use of a separate spreading implement.

An alternative embodiment may omit the centre plastics layer 13 incorporating the hole 16. This construction is most suitable for cases where the aperture formed by the fracture is located and sized so as to provide the desired degree of control for expulsion of the material. Where the rigid layer fractures completely in two, the middle layer defines the exit aperture for the packaged material.

While the present example has been described with reference to an elongate sachet, it is envisaged that other shapes are possible such as oval, circular or the like. Also, while the particular example has been described with reference to a condiment or liquid substance for use with foodstuffs, the present invention could equally be used in the application of medical substances such as antiseptics, burn treatments and the like. In this application, the present invention could additionally have an absorbent layer located proximate the exit aperture and extend over the exposed surface of layer 11 as desired. The absorbent layer could

further be covered by a sterile protective strip which may be torn off to expose the absorbent layer.

Further, the sachet could be constructed so that the reservoir is significantly larger than the semi-rigid layer. In this alternative embodiment, the rigid layer and fracture would act more as an opening means for a larger reservoir. It is envisaged that volumes of 1 to 2 litres could be accommodated by such a construction and the breakable part of the sachet be located conveniently on the wall of the reservoir so that upon bending the fracture is formed and the enclosed substance extracted by squeezing the reservoir.

Further, the reservoir shape need not be limited to elongate or oval. The reservoir may be formed so as to be in a distinctive shape such as a well known bottle outline or similar recognisable outline.

Referring to Figure 5 an apparatus for the manufacture of the sachets is shown. One novel aspect of the process resides in the method of forming each of the sachet reservoirs. The particular example shown is for the manufacture of sachets including a single semi-rigid layer and two flexible plastics layers as described above wherein the two flexible plastics layers form the reservoir for containing the substance. The layers are fed from continuous rolls 21, 26 and 25. The middle layer 31 has an aperture formed therein by means of a device 24. Such a device may operate by melting, punching or a similar technique known in the art. The spacing and location of the holes is calculated based on the sachet dimensions and the location of the fracture point or "score" in the semi-rigid layer. The fracture point may be preformed in the semi-rigid layer or formed during the manufacture process. As discussed above, the score may be smaller than the width of the sachet, thus providing a different fracture characteristic.